

What is claimed is:

1. A computer-aided modeling system comprising:
 - a knowledge management system for managing a set of modeling rules; and
 - 5 a computer-aided design system controlled by the knowledge management system, wherein the knowledge management system generates instructions for modeling a geometric structure based on the set of modeling rules and communicates the instructions to the computer-aided design system for generating a model of the geometric structure.

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2. A computer-aided modeling system according to claim 1, wherein the knowledge management system comprises a knowledge management application in communication with the computer-aided design system through an application program interface of the computer-aided design system.

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3. A computer-aided modeling system according to claim 2, wherein the knowledge management system further comprises a knowledge storage application in communication with the knowledge management application for storing the set of rules in a central database and communicating the set of rules to the knowledge management application.

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4. A computer-aided modeling system according to claim 3, wherein the knowledge management system further comprises a knowledge acquisition application in communication with the knowledge storage application for generating the set of rules and 25 communication the set of rules to the knowledge storage application for storage in the central database.

5. A computer-aided modeling system according to claim 1, further comprising a graphical user interface, wherein the knowledge management system produces a 30 graphical display on the graphical user interface, the graphical display comprising a first

portion including information from the knowledge management system and a second portion including information from the computer-aided design system.

6. A computer-aided modeling system according to claim 5, wherein the second portion includes a display window generated by the computer-aided design system.

7. A computer-aided modeling system according to claim 6, wherein the display window includes a graphical representation of the geometric structure.

10 8. A computer-aided modeling system according to claim 7, wherein the display window further includes controls for manipulating the graphical representation of the geometric structure.

15 9. A computer-aided modeling system according to claim 1, wherein the set of rules includes at least one rule relating to a non-geometric attribute of the geometric structure.

10. A computer-aided modeling system according to claim 9, wherein the at least one rule relating to a non-geometric attribute includes a rule for determine a cost of the geometric structure.

20 11. A computer-aided modeling system according to claim 9, wherein the at least one rule relating to a non-geometric attribute includes a rule for defining a process.

25 12. A computer-aided modeling system according to claim 1, wherein the set of rules includes at least one rule relating to a class having a plurality of geometric structures.

13. A computer-aided modeling system according to claim 1, wherein the set of rules includes at least one rule relating to a geometric structure defined in the computer-aided design system.

14. A computer-aided modeling system according to claim 1, wherein the computer-aided design system comprises a three-dimensional computer-aided design system.

15. A computer-aided modeling system according to claim 14, wherein the three-dimensional computer-aided design system is SOLIDWORKS(TM).

16. A computer-aided modeling system according to claim 14, wherein the computer-aided design system further comprises a two-dimensional computer-aided design system.

10 17. A computer-aided modeling system according to claim 16, wherein the two-dimensional computer-aided design system is VISIO(TM).

18. A method for computer-aided design modeling, the method comprising:
generating instructions for modeling a geometric structure based on a set of
15 modeling rules; and
communicating the instructions to a computer-aided design system for generating
a model of the geometric structure.

19. A method according to claim 18, wherein generating instructions for modeling a
20 geometric structure based on a set of modeling rules comprises obtaining the set of
modeling rules from a central database over a communication network.

20. A method according to claim 18, wherein the computer-aided design system
comprises an application program interface, and wherein communicating the instructions
25 to a computer-aided design system comprises communicating the instructions to the
computer-aided design system through the application program interface.

21. A method according to claim 18, further comprising:
producing a graphical display on a graphical user interface, the graphical display
30 comprising a first portion including information relating to the set of modeling rules and
a second portion including information from the computer-aided design system.

22. A method according to claim 21, wherein producing a graphical display on a graphical user interface comprises:

5 directing a window display generated by the computer-aided design system to be displayed on the graphical user interface.

23. A method according to claim 22, wherein the display window includes a graphical representation of the geometric structure.

10 24. A method according to claim 23, wherein the display window further includes controls for manipulating the graphical representation of the geometric structure.

25. A method according to claim 18, wherein the set of rules includes at least one rule relating to a non-geometric attribute of the geometric structure.

15 26. A method according to claim 25, wherein the at least one rule relating to a non-geometric attribute includes a rule for determine a cost of the geometric structure.

20 27. A method according to claim 25, wherein the at least one rule relating to a non-geometric attribute includes a rule for defining a process.

28. A method according to claim 18, wherein the set of rules includes at least one rule relating to a class having a plurality of geometric structures.

25 29. A method according to claim 18, wherein the set of rules includes at least one rule relating to a geometric structure defined in the computer-aided design system.

30 30. A method according to claim 18, wherein the computer-aided design system comprises a three-dimensional computer-aided design system.

31. A method according to claim 30, wherein the three-dimensional computer-aided design system is SOLIDWORKS(TM).

32. A method according to claim 30, wherein the computer-aided design system

5 further comprises a two-dimensional computer-aided design system.

33. A method according to claim 32, wherein the two-dimensional computer-aided design system is VISIO(TM).

10 34. Apparatus for computer-aided design modeling, the apparatus comprising:
a design modeler for generating instructions for modeling a geometric structure
based on a set of modeling rules; and

an interface from the design modeler to a computer-aided design system for
communicating the instructions to the computer-aided design system for generating a
15 model of the geometric structure.

35. Apparatus according to claim 34, further comprising an interface from the design
modeler to a central database over a communication network for obtaining the set of
modeling rules from the central database.

20 36. Apparatus according to claim 34, wherein the computer-aided design system
comprises an application program interface, and wherein the interface from the design
modeler to a computer-aided design system complies with the application program
interface.

25 37. Apparatus according to claim 34, further comprising a graphical user interface,
wherein the design modeler produces a graphical display on the graphical user interface,
the graphical display comprising a first portion including information from the design
modeler and a second portion including information from the computer-aided design
30 system.

38. Apparatus according to claim 37, wherein the design modeler directs a window display generated by the computer-aided design system to be displayed on the graphical user interface.

5 39. Apparatus according to claim 38, wherein the display window includes a graphical representation of the geometric structure.

40. Apparatus according to claim 39, wherein the display window further includes controls for manipulating the graphical representation of the geometric structure.

10 41. Apparatus according to claim 34, wherein the set of rules includes at least one rule relating to a non-geometric attribute of the geometric structure.

15 42. Apparatus according to claim 41, wherein the at least one rule relating to a non-geometric attribute includes a rule for determine a cost of the geometric structure.

43. Apparatus according to claim 41, wherein the at least one rule relating to a non-geometric attribute includes a rule for defining a process.

20 44. Apparatus according to claim 34, wherein the set of rules includes at least one rule relating to a class having a plurality of geometric structures.

45. Apparatus according to claim 34, wherein the set of rules includes at least one rule relating to a geometric structure defined in the computer-aided design system.

25 46. A method according to claim 34, wherein the computer-aided design system comprises a three-dimensional computer-aided design system.

30 47. Apparatus according to claim 46, wherein the three-dimensional computer-aided design system is SOLIDWORKS(TM).

48. Apparatus according to claim 46, wherein the computer-aided design system further comprises a two-dimensional computer-aided design system.

49. Apparatus according to claim 48, wherein the two-dimensional computer-aided
5 design system is VISIO(TM).

50. Apparatus comprising a computer readable medium having embodied therein a computer program for computer-aided design modeling, the computer program comprising:

10 means for generating instructions for modeling a geometric structure based on a set of modeling rules; and
means for communicating the instructions to a computer-aided design system for generating a model of the geometric structure.

15 51. Apparatus according to claim 50, wherein the means for generating instructions comprises means for obtaining the set of modeling rules from a central database over a communication network.

20 52. Apparatus according to claim 50, wherein the computer-aided design system comprises an application program interface, and wherein the means for communicating the instructions to the computer-aided design system comprises means for communicating the instructions to the computer-aided design system through the application program interface.

25 53. Apparatus according to claim 50, further comprising:
means for producing a graphical display on a graphical user interface, the graphical display comprising a first portion including information relating to the set of modeling rules and a second portion including information from the computer-aided design system.

54. Apparatus according to claim 53, wherein the means for producing a graphical display on a graphical user interface comprises:

means for directing a window display generated by the computer-aided design system to be displayed on the graphical user interface.

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55. Apparatus according to claim 54, wherein the display window includes a graphical representation of the geometric structure.

56. Apparatus according to claim 55, wherein the display window further includes controls for manipulating the graphical representation of the geometric structure.

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57. Apparatus according to claim 50, wherein the set of rules includes at least one rule relating to a non-geometric attribute of the geometric structure.

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58. Apparatus according to claim 57, wherein the at least one rule relating to a non-geometric attribute includes a rule for determine a cost of the geometric structure.

59. Apparatus according to claim 57, wherein the at least one rule relating to a non-geometric attribute includes a rule for defining a process.

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60. Apparatus according to claim 50, wherein the set of rules includes at least one rule relating to a class having a plurality of geometric structures.

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61. Apparatus according to claim 50, wherein the set of rules includes at least one rule relating to a geometric structure defined in the computer-aided design system.

62. A method according to claim 50, wherein the computer-aided design system comprises a three-dimensional computer-aided design system.

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63. Apparatus according to claim 62, wherein the three-dimensional computer-aided design system is SOLIDWORKS(TM).

64. Apparatus according to claim 62, wherein the computer-aided design system further comprises a two-dimensional computer-aided design system.

5 65. Apparatus according to claim 64, wherein the two-dimensional computer-aided design system is VISIO(TM).

66. Apparatus for computer-aided design modeling, the apparatus comprising:
means for generating instructions for modeling a geometric structure based on a
10 set of modeling rules; and
means for communicating the instructions to a computer-aided design system for generating a model of the geometric structure.